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PATENT ABSTRACTS OF JAPAN

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(54) AGENT FOR MEDICAL APPLICATION

(57)Abstract:
PURPOSE: To obtain a repeatedly applicable agent having sufficient applicability and further with low irritancy to the skin when peeling thereof.
CONSTITUTION: An agent for medical application obtained by forming on one surface of a support, a tacky agent layer comprising a tacky base containing a 10-30C paraffinic hydrocarbon and/or naphthenic hydrocarbon and an alicyclic hydrocarbon resin in an amount of 80-95wt.% total amount thereof and 5-20wt.% styrene-isoprene-styrene block copolymer at a weight ratio of the paraffinic hydrocarbon and/or naphthenic hydrocarbon to the alicyclic hydrocarbon resin within the range of (2:3) to (3:2).

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CLAIMS

[Claim(s)]

[Claim 1] The medical-application pasting agent characterized by for the aforementioned adhesive basis containing the paraffin hydrocarbon and/or naphthene hydrocarbon, and alicycle group hydrocarbon resin of carbon numbers 10-30 in total, and containing a styrene-isoprene-styrene block copolymer at 5 - 20% of the weight of a rate 80 to 95% of the weight, and the weight ratio of the aforementioned paraffin hydrocarbon and/or a naphthene hydrocarbon, and an alicycle group hydrocarbon resin being in the range of 2:3-3:2 in the medical-application pasting agent by which the binder layer containing an adhesive basis was prepared in one side of a base material.

[Claim 2] The medical-application pasting agent according to claim 1 to which the aforementioned binder layer is characterized by containing a medicine further.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] About the medical-application pasting agent which prepared the binder layer in one side of a base material, especially, this invention is excellent in pasting nature, and can be stuck repeatedly, and relates to the stimulative low pasting agent to the skin further.
[0002]
[Description of the Prior Art] It not only excels in the adhesiveness at the time of pasting, but in a medical-application pasting agent, it is required that the **** hips do not arise at the time of ablation and that there are few physical stimuli to the skin. However, in the pasting agent using the rubber system adhesiveness basis, generally, although it was excellent, adhesiveness made the horny layer of the skin exfoliate for the adhesion at the time of exfoliation, a rash tended to be produced and the phenomenon which the **** hips of hair etc. do not have tended to produce it. Then, the following pasting agents are proposed as what can soften stimulative [over the skin].
[0003] For example, the pasting medicine which contained the skin stimulant and the antiphlogistic sedative drug as an effect-of-a-medicine component is proposed by JP,54-138124,A using the A-B-A type non-vulcanized elastic block copolymer as an adhesive basis. Moreover, in JP,60-34922,B, an A-B-A type thermoplasticity rubber elasticity object, fats and oils or a higher fatty acid, and a tackifier are contained as an indispensable component as an adhesive basis, and the pasting medicine which comes to blend an effect-of-a-medicine component further is proposed. Similarly, the pasting agent which uses an A-B-A type thermoplastic-elastomer component, an oil component, an adhesion grant component, and an effect-of-a-medicine component as an indispensable component is proposed by JP,56-39014,A.
[0004]
[Problem(s) to be Solved by the Invention] However, also in the pasting agent indicated by each above-mentioned advanced technology, although the adhesiveness at the time of pasting was excellent, the horny layer of the skin might be too exfoliated at the time of exfoliation, and it might produce the **** hips etc. That is, it was not fully able to reduce stimulative [over the skin], with required adhesiveness maintained. Without spoiling the adhesiveness at the time of pasting, the purpose of this invention can be stuck repeatedly and is to offer the stimulative low pasting agent to the skin further.
[0005]
[Means for Solving the Problem] The result to which invention-in-this-application persons examined wholeheartedly the above-mentioned trouble in the conventional pasting agent, In order to obtain pasting nature sufficient in the conventional pasting agent, the rubber elasticity object contains more mostly in an adhesive basis than 20 % of the weight. Therefore, it thought that the adhesion to the skin became strong too much, and as a result of producing and examining the various adhesive bases which made the compounding ratio of a rubber elasticity object low, it came to accomplish this invention.
[0006] Namely, the pasting agent of this invention is set to the medical-application pasting agent which comes to prepare the binder layer containing an adhesive basis in one side of a base material. The above-mentioned adhesive basis in total the paraffin hydrocarbon and/or

naphthene hydrocarbon, and alicycle group hydrocarbon resin of carbon numbers 10-30 80 - 95 % of the weight, It is characterized by including a styrene-isoprene-styrene block copolymer at 5 - 20% of the weight of a rate, and the weight ratio of the aforementioned paraffin hydrocarbon and/or a naphthene hydrocarbon, and an alicycle group hydrocarbon resin being in the range of 2:3-3:2.

[0007] In the paraffin hydrocarbon and/or the naphthene hydrocarbon this invention, in order to reduce the skin irritation resulting from the adhesiveness of a rubber elasticity object, the paraffin hydrocarbon and/or the naphthene hydrocarbon are blended into the adhesive basis. As the above-mentioned paraffin hydrocarbon and/or a naphthene hydrocarbon, what has a carbon number in the range of 10-30 is used. A paraffin hydrocarbon like the light liquid paraffin which is the blend object of a naphthene hydrocarbon and a paraffin hydrocarbon, a heavy liquid paraffin or a hexa methyl tetracosane, hexa methyl tetracosa HEKISAEN, or alpha olefin oligomer as an example of such a paraffin hydrocarbon and/or a naphthene hydrocarbon etc. is mentioned, and 1 of sorts of these and two sorts or more can be used.

[0008] In addition, since it is a solid at a room temperature and does not have sufficient softening degree, when the carbon number of a paraffin hydrocarbon and/or a naphthene hydrocarbon is larger than 31, even if it blends with the below-mentioned alicycle group saturated-hydrocarbon resin or a styrene-isoprene-styrene block copolymer, the pasting agent which shows good adhesion cannot be obtained. Moreover, since a softening degree becomes high and a binder layer becomes soft too much when a carbon number is nine or less, it is not desirable.

[0009] By the alicycle group saturated-hydrocarbon resin this invention, in order to soften the skin irritation of a binder, the alicycle group saturated-hydrocarbon resin is blended in the above-mentioned specific range into the adhesive basis. As an alicycle group saturated-hydrocarbon resin, one sort of the alicycle group saturated-hydrocarbon resin whose softening temperature is 65 degrees C - 130 degrees C, or two sorts or more can be suitably used in consideration of the adhesion and skin irritation at the time of pasting. As an example of such an alicycle group saturated-hydrocarbon resin, ARUKON (a tradename, the Arakawa chemical-industry company make), a Queen ton (a tradename, Nippon Zeon Co., Ltd. make), etc. are mentioned.

[0010] In addition, as for a paraffin hydrocarbon and/or a naphthene hydrocarbon, and an alicycle group saturated-hydrocarbon resin, a weight ratio is blended in 2:3-3:2. This is because it is because pasting nature becomes inadequate or the paste remainder arises after exfoliation, and the phenomenon of the **** hips arising or exfoliating the horny layer of the skin at the time of exfoliation in being smaller than another side and 2:3 arises and repeat pasting cannot be performed, either, when the weight ratio of a paraffin hydrocarbon and/or a naphthene hydrocarbon is larger than 3:2.

[0011] By the styrene-isoprene-styrene block-copolymer this invention, in order to raise pasting nature, the styrene-isoprene-styrene block copolymer contains at 5 - 20% of the weight of a rate in the adhesive basis. That whose styrene / rubber ratio (weight ratio) solution viscosity is 300 - 2000CPS (when it ****s in a toluene solution 25% of the weight), and are about 14 / 86 to 21/79 as a styrene-isoprene-styrene block copolymer which can be used is used.

[0012] In this invention, the content of a styrene-isoprene-styrene block copolymer is made into 5 - 20% of the weight of the range because the phenomenon in which become high too much, and the **** hips arise or pasting nature exfoliates the keratin of the skin at the time of exfoliation will arise, if it exceeds 20 % of the weight, and it is because pasting nature sufficient at less than 5 % of the weight cannot be obtained.

[0013] As a medical-application pasting agent of a medicine this invention, although the medicine contained, what others and a medicine do not contain is contained. As a medical-application pasting agent which a medicine does not contain, the plaster for emergencies, the drape for an operation, etc. are mentioned. Moreover, you may make a claim 2 contain a medicine in a binder layer like a publication in the pasting agent of this invention. As a medicine which can be used, transderma or as long as it passes and a biomembrane may be

penetrated by membrane medication, limitation is not carried out. For example, an alleviation-of-fever antiphlogistic sedative drug, a steroid system anti-inflammatory agent, vasodepressor, high blood pressure and the agent for arrhythmic, an antihypertensive, an antitussive and expectorant agent, an antitumor agent, a local anesthetic, a hormone drug, asthma and an allergic rhinitis medical treatment agent, an antihistamine, an anticoagulant, a ****** agent, cerebral circulation and a metabolism improvement agent, anti-**** and an anti-uneasy agent, a vitamin tablet, an oral blood sugar downward agent, antiulcer drug, a sleeping drug, an antibiotic, skin stimulus medicine, etc. are mentioned.

[0014] As a concrete example of the above-mentioned alleviation-of-fever antiphlogistic sedative drug, a salicylic acid, a methyl salicylate, a salicylic-acid glycol, glycyrrhetinic acid, a glycyrrhizinic acid, an indomethacin, ketoprofen, flurbiprofen, an ANFE nak, etc. are mentioned. As a concrete example of an antihistamine, diphenhydramine, hydrochloric-acid diphenhydramine, maleic-acid chlorpheniramine, etc. are mentioned.

[0015] Moreover, as a concrete example of skin stimulus medicine, menthol, a peppermint oil, camphor, a nonylic acid WANIRIRU amide, a nicotinic-acid benzyl, nicotinic-acid beta-butoxy ethyl, a pepper (extract), capsanthin, a gardeniae fructus (extract), etc. are mentioned. As an addition of the above medicines, it is possible to blend at a rate to 30 % of the weight into the whole binder layer. It is because it becomes impossible to spoil the function of the adhesive basis mentioned above and to satisfy the low stimulative one over sufficient pasting nature and the sufficient skin when the loadings of a medicine exceed 30 % of the weight.

[0016] When it constitutes the binder layer used for the pasting agent of other component this inventions contained in a binder layer, in addition to a medicine component, you may mix suitably the component in which styrene-isoprene-styrene block copolymers, such as a polyisobutylene, a polybutene, or a liquefied polyisoprene, and compatibility are still more possible if needed [the adhesive basis and if needed] which were mentioned above. Especially, it is desirable to mix a polybutene from a viewpoint of pasting nature. But the above liquefied polymer components in which a styrene-isoprene-styrene block copolymer and compatibility are possible need to use at 10 or less % of the weight of a rate of the whole binder layer. It is because sufficient low stimulative one over sufficient pasting nature and the sufficient skin is unrealizable if it exceeds 10 % of the weight.

[0017] Moreover, in the binder layer in the pasting agent of this invention, unless the operation effect of this invention is checked for an antioxidant or a bulking agent other than the medicine mentioned above or a liquefied polymer component, you may add suitably.

[0018] On the occasion of manufacture of the pasting agent which does not contain the manufacture method medicine, specified quantity combination of the component which constitutes the binder layer first mentioned above is carried out, and under a nitrogen purge, at the temperature of 120 degrees C - 150 degrees C, heating stirring is carried out and it fuses. Next, it considers as a pasting agent by laminating a base material (or releasing paper) in the binder layer which spread the fused binder component on the releasing paper (or base material) by the hot-melt coating machine, and was spread further.

[0019] Moreover, in making a medicine contain, after carrying out heating stirring and carrying out melting of the binder component at the temperature of 120-150 degrees C under a nitrogen purge as mentioned above, by adding a medicine and mixing uniformly, where the temperature of a binder is cooled at 100-120 degrees C, a binder component can be obtained and a pasting agent can be obtained by making it spread by the hot-melt coating machine as mentioned above.

[0020] In addition, a solvent coating method can also be used as the manufacture method of the medical-application pasting agent of this invention. For example, after dissolving with a solvent each component which constitutes the adhesive basis mentioned above, a medicine is added if needed and a uniform solution is obtained. next, the thing for which the obtained solution is applied and dried on a releasing paper (or base material), and a base material (or releasing paper) is laminated on a binder layer -- a pasting agent can be obtained In this case, although arbitrary things can be used as long as the combination constituent mentioned above may be dissolved as a solvent, it is desirable to use the low thing of the boiling point, and it is

suitably chosen by the composition blended. As an example of the above solvents, a cyclohexane, a hexane, toluene, a tetrahydro furan, a methylene chloride, etc. are mentioned.
[0021] Moreover, the things which consist of the film which consists of synthetic resin, such as polyester, polyethylene, a polyvinyl chloride, a polyvinylidene chloride, a polyethylene-vinyl acetate copolymer, or polyurethane, a nonwoven fabric, cloth, or an aluminum foil as the above-mentioned base material, or these lamination objects are used. As a releasing paper, it consists of polyester film, a polypropylene film, polyethylene coat paper of fine quality, or polyethylene coat glassine, and what, on the other hand, performed silicon mold release processing to the field is used suitably.
[0022]
[Function] Since the styrene-isoprene-styrene block copolymer which is a rubber elasticity object is blended at 5 - 20% of the weight of a rate into the adhesive basis in the medical-application pasting agent of this invention and the paraffin hydrocarbon and/or naphthene hydrocarbon, and alicycle group hydrocarbon resin of the brown coal prime factors 10-30 contain at 80 - 95% of the weight of a rate in total. Stimulative [over the skin] can be lowering effectively, having sufficient pasting nature, since the weight ratio of a paraffin hydrocarbon and/or a naphthene hydrocarbon, and an alicycle group hydrocarbon resin is further made into the range of 2:3-3:2.
[0023] That is, since the styrene-isoprene-styrene block copolymer which is a rubber elasticity object for raising pasting nature contains at 20 or less % of the weight of a rate while heightening the cohesive force of an adhesive basis, stimulative [over the skin] can be lowering. And since the paraffin hydrocarbon and/or naphthene hydrocarbon, and alicycle group hydrocarbon resin of the above-mentioned specification are blended at an above-mentioned specific rate, the pasting nature which is the advantage of a styrene-isoprene-styrene block copolymer is not spoiled.
[0024]
[Example]
As shown in Table 1 of an example 1 - 4 following, the component was blended and the pasting agent of examples 1-4 was obtained. That is, it blended at a rate shown in Table 1, and under the nitrogen purge, at the temperature of 120-150 degrees C, heating stirring was carried out and the component (adhesive basis component) except a medicine was fused. The temperature of an adhesive basis solution was cooled at 100-120 degrees C after melting, the medicine was added, and the binder layer solution was obtained by mixing uniformly. In addition, in the example 3, since the medicine did not contain, the binder layer solution was obtained by fusing after the above-mentioned heating stirring.
[0025] Next, the binder layer solution fused using the hot-melt coating machine was spread on the releasing paper which consists of polyethylene coat paper of fine quality so that the thickness after dryness might be set to 90-100 micrometers, and the pasting agent of examples 1-4 was obtained by laminating an elasticity vinyl chloride film with a thickness [as a base material] of 135 micrometers.
[0026]
[Table 1]

	実施例1	実施例2	実施例3	実施例4
ＳＩＳ	１５	１５	１８	１５
ポリブテン		５		
脂環族飽和炭化水素樹脂	４５．５	４３	４１	４５．５
流動パラフィン	３９．５	３７	４１	２０
ヘキサメチルテトラコサン				１９．５

薬　剤	サリチル酸グリコール 6％ 1－メントール 4％	インドメタシン 0.5 ％	なし	サリチル酸グリコール 6％ 1－メントール 4％

[0027] In addition, in Table 1, the detail of the used component is as follows. A SIS-- styrene-isoprene-styrene block copolymer, shell chemistry company make, a tradename: Cali FREX TR1107 (about 1600 solution viscosity CPS (value in a 25-% of the weight toluene solution), styrene-rubber ratio (% of the weight) : 14/86). Polybutene -- average molecular weight: About 1350, the Nippon Oil chemistry company make, a tradename:Nippon Oil polybutene.
[0028] The alicycle group saturated-hydrocarbon resin -- softening temperature of 90 degrees C, molecular weight 630, the Arakawa chemical-industry company make, a tradename: ARUKON P-90.
Liquid paraffin -- A heavy liquid paraffin, **** Pharmaceuticals company make.
Medicine -- The medicine content in Table 1 displayed the content of the medicine in the whole binder layer component which comes to mix an adhesive basis and a medicine by weight %.
[0029] If it removed having blended each component as shown in Table 2 of the example 1 of comparison - 4 following, the pasting agent of the examples 1-4 of comparison was obtained like examples 1-4.
[0030]
[Table 2]

	比較例1	比較例2	比較例3	比較例4
ＳＩＳ	4	30	15	15
脂環族飽和炭化水素樹脂	43	35	25．5	59．5
流動パラフィン	53	35	59．5	25．5
薬　剤	サリチル酸グリコール 6％ 1－メントール 4％	インドメタシン 0.5 ％	インドメタシン 0.5 ％	インドメタシン 0.5 ％

[0031] The detail of each component in Table 2 is the same as that of the case of Table 1. It evaluated by performing the patch test and an adhesion examination about each pasting agent of the examples 1-4 which are the evaluation above, and were made and acquired, and the examples 1-4 of comparison.
[0032] The patch-test patch test followed the five following items. A result is shown in Table 3.
** Pasting nature : the 3x4cm tape-like pasting agent was evaluated after 6-hour pasting to the overarm. The error criterion carried out as follows.
fitness: -- 95% [of poor residual adhesion area of a tape-like pasting agent] or more: -- 75% or less of residual adhesion area of a tape-like pasting agent [0033] ** Paste remainder : it evaluated after ablation whether a binder would remain on the skin. The meaning of the evaluation sign in Table 3 is as follows.
+ : the binder remained on the skin after ablation.
- : a binder did not remain on the skin after ablation.
** The **** hips at the time of ablation : the existence of the **** hips of hair was evaluated at the time of ablation. In Table 3, a "****" and the time at which nothing was were written for the time with the **** hips as "nothing."
[0034] ** Painfulness at the time of ablation : organoleptics estimated the ache at the time of

ablation, and the case where it was especially sensed for the case of not being painful, at the time of ablation an ache "is nothing" was written as "painful" in Table 3.
** Keratin ablation : the grade of ablation of the skin horny layer at the time of ablation was evaluated. The meaning of the sign in Table 3 is as follows.
+ +:pasting part -- overall -- keratin ablation +: -- keratin ablation-:keratin ablation is not accepted in part [0035]
[Table 3]

貼付試験結果

評価項目	実施例1	実施例2	実施例3	実施例4	比較例1	比較例2	比較例3	比較例4
①貼付性	良好	良好	良好	良好	不良	不良	不良	良好
②糊残り	−	−	−	−	+	−	+	−
③剥離時の毛むしり	なし	なし	なし	なし	なし	あり	なし	あり
④剥離時の痛さ	なし	なし	なし	なし	なし	痛い	なし	痛い
⑤角質の剥離	−	−	−	−	なし	+	なし	++

[0036] A tuck and adhesion were evaluated by the way below an adhesion examination about each pasting agent of examples 1-4 and the examples 1-4 of comparison.
** Tuck : the **** method -- JIS It carried out according to the adhesive tape and pressure sensitive adhesive sheet test method of Z0237. That is, the pasting agent whose thickness of a binder layer is about 50-100 micrometers was turned on the slant face of 30 degrees, the binder stratification plane was turned upwards, it laid, the length of a sample adhesive face was set to 5cm, a ground run was set to 10cm, the steel ball was rolled, and the size of the ball which stops on an adhesive face was measured.
[0037] ** Adhesion : tear off 180 degrees and it is law. -- JIS It examined according to the adhesive tape and pressure sensitive adhesive sheet test method of Z0237. The pasting agent

was cut in the rectangle with a width-of-face [of 15mm] x length of 70mm or more, and it considered as the test piece. This test piece is stuck on a stainless steel board, and it is 1 kg/cm2. It was stuck by pressure by the load, the free end was turned up 180 degrees, and the load at the time of tearing off by part for 300mm/in hauling speed was searched for. This load was expressed with the g/15mm unit, and this was expressed as adhesion. The result about the tuck measured as mentioned above and adhesion is shown in Table 4.

[0038]

[Table 4]

粘着力試験結果

	タック	粘着力
実施例1	19	102
実施例2	26	177
実施例3	23	106
実施例4	22	110
比較例1	10	30
比較例2	12	400
比較例3	2以下	30
比較例4	32以上	550

[0039]

[Effect of the Invention] As mentioned above, according to this invention, they are the paraffin hydrocarbon of carbon numbers 10-30, and/or a naphthene hydrocarbon. The alicycle group saturated-hydrocarbon resin and the styrene-isoprene-styrene block copolymer contain at an above-mentioned specific rate. And since the binder layer is constituted using the adhesive basis by which the weight ratio of a paraffin hydrocarbon and/or a naphthene hydrocarbon, and an alicycle group saturated-hydrocarbon resin was made the above-mentioned specific range, It becomes possible for stimulative [over the skin] to be able to lower effectively it not only to to have sufficient pasting nature, but, to be able to prevent the phenomenon which is not desirable in which the horny layer of the **** hips or the skin exfoliates, and to offer the pasting agent in which repeat pasting is possible.

[Translation done.]